

Please cancel claims 1, 3-6, 8-10, and 12-13 without prejudice, and add new claims 14-31. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. through 13. (canceled).

14. (new) Method for controlling a direct-injection gasoline engine during regeneration of a lean NOx trap disposed in an exhaust path of the engine, the regeneration characterized by a transition from stratified lean engine operation to homogeneous rich engine operation, the steps of the method comprising:

- (a) computing a feed-forward compensating torque, which consists of a single estimate for decreased engine torque during the regeneration of the lean NOx trap resulting from the transition from stratified lean engine operation to homogeneous rich engine operation;
- (b) determining a base desired torque to be provided by the engine;
- (c) increasing the based desired torque by the feed-feed forward compensating torque to obtain an adjusted desired torque;
- (d) controlling engine operation based upon the adjusted desired torque; and
- (e) repeating steps (b) through (d) during the regeneration of the lean NOx trap, thereby using the single estimate for the feed-forward compensating torque to compensate for decreased engine torque resulting from the homogeneous rich engine operation.

15. (new) The method of claim 14, wherein the single estimate for the feed-forward compensating torque in step (a) is computed based upon air-fuel ratios associated with the stratified lean engine operation and the homogeneous rich engine operation prior to and after initiation of the regeneration of the lean NOx trap.

16. (new) The method of claim 14, wherein the single estimate for the feed-forward compensating torque in step (a) is computed based upon desired engine air charge

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per cylinder and exhaust gas recirculation mass fraction associated with the stratified lean engine operation and the homogeneous rich engine operation prior to and after initiation of the regeneration of the lean NOx trap.

17. (new) The method of claim 14, wherein the step (d) of controlling engine operation is accomplished by adjusting engine fueling amount based upon the adjusted desired torque.

18. (new) The method of claim 14, wherein the step (b) of determining a base desired torque is accomplished in accordance with one of a throttle pedal position, a cruise control setting and an idle speed control.

19. (new) The method of claim 14, wherein the step (e) further includes: determining an end of the regeneration of the lean NOx trap, after which engine operation is controlled based upon the base desired torque.

20. (new) System for controlling a direct-injection gasoline engine during regeneration of a lean NOx trap disposed in an exhaust path of the engine, the regeneration characterized by a transition from stratified lean engine operation to homogeneous rich engine operation, comprising:

means for computing a feed-forward compensating torque, which consists of a single estimate for decrease in engine torque during the regeneration of the lean NOx trap resulting from the transition from stratified lean engine operation to homogeneous rich engine operation;

means for performing a first operation of determining a base desired torque to be provided by the engine;

means for performing a second operation of increasing the determined based desired torque by the feed-forward compensating torque to obtain an adjusted desired torque;

means for performing a third operation of controlling engine operation based upon the adjusted desired torque; and

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means for repeating the first, second, and third operations during the regeneration of the lean NOx trap, thereby using the single estimate for the feed-forward compensating torque to compensate for decreased engine torque resulting from the homogeneous rich engine operation.

21. (new) The system of claim 20, wherein the single estimate for the feed-forward compensating torque is computed based upon air-fuel ratios associated with the stratified lean engine operation and the homogeneous rich engine operation prior to and after initiation of the regeneration of the lean NOx trap.

22. (new) The system of claim 20, wherein the single estimate for the feed-forward compensating torque is computed based upon air charge per cylinder and exhaust gas recirculation mass fraction associated with the stratified lean engine operation and the homogeneous rich engine operation prior to and after initiation of the regeneration of the lean NOx trap.

23. (new) The system of claim 20, wherein the means for performing the third operation is accomplished by adjusting engine fueling amount based upon the adjusted desired torque.

24. (new) The system of claim 20, wherein the desired base torque is determined based upon one of a throttle position, a cruise control setting and an idle speed control.

25. (new) The system of claim 20, wherein the means for repeating the first, second, and third operations includes an operation for determining an end of the regeneration of the lean NOx trap, after which engine operation is controlled based upon the base desired torque.

26. (new) Article of manufacture comprising a storage medium having a computer program encoded therein for effecting coordinated control of engine operation and

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regeneration of a lean NOx trap disposed in an exhaust path of a direct-injection gasoline engine, the regeneration characterized by a transition from stratified lean engine operation to homogeneous rich engine operation, the program comprising:

- code for computing a feed-forward compensation torque, which consists of a single estimate for decreased engine torque during the regeneration of the lean NOx trap resulting from the transition from stratified lean engine operation to homogeneous rich engine operation;

- code for performing a first operation of determining a base desired torque to be provided by the engine;

- code for performing a second operation of increasing the base desired torque by the feed-forward compensating torque to obtain an adjusted desired torque;

- code for performing a third operation of controlling engine operation based upon the adjusted desired torque; and

- code for repeating the first, second, and third operations during the regeneration of the lean NOx trap, thereby using the single estimate for the feed-forward compensating torque to compensate for decreased engine torque resulting from the homogeneous rich engine operation.

27. (new) The article of claim 26, wherein the single estimate for the feed-forward compensating torque is computed based upon air-fuel ratios associated with the stratified lean engine operation and the homogeneous rich engine operation prior to and after initiation of the regeneration of the lean NOx trap.

28. (new) The article of claim 26, wherein the single estimate for the feed-forward compensating torque is computed based upon air charge per cylinder and exhaust gas recirculation mass fraction associated with the stratified lean engine operation and the homogeneous rich engine operation prior to and after initiation of the regeneration of the lean NOx trap.

29. (new) The article of claim 26, wherein the third operation is accomplished by adjusting engine fueling amount based upon the adjusted desired torque.

30.. (new) The article of claim 26, wherein the desired base torque is determined based upon one of a throttle position, a cruise control setting, and an idle speed control.

31. (new) The article of claim 26, wherein the code for repeating the first, second, and third operations further includes code for determining an end of the regeneration of the lean NOx trap, after which engine operation is controlled based upon the base desired torque.

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